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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/823,689

04/14/2004

Jou-hahn Lee

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05/03/2006

BUCHANAN INGERSOLL PC  
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EXAMINER

ROY, SIKHA

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/823,689

Applicant(s)

LEE ET AL.

Examiner

Sikha Roy

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0404.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Figs. 4(a) and 4(b) are objected because there is no label representing the ordinate (current density) of the graphs.

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claim 1 is objected to because of the following informalities:

In claim 1 the limitation reciting 'an organic emission material layer interposed between the HTL and the anode' is objected because the specification (Fig. 3 page 4

line 27) discloses the organic emission material layer interposed between the HTL and the cathode.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,776,623 to Hung et al.

Regarding claim 1 Hung discloses (Fig. 1 column 2 lines 47-67, column 3 lines 10-30) an organic EL device comprising a cathode 17b (thick conductive layer), an anode 13, a hole transporting layer HTL (diamine layer for hole transporting, hole transporting NPB layer in example 1) between the cathode 17b and the anode 13, an organic emission material layer (EML)15 between the HTL and the cathode, and an interlayer 17a formed of a halide series material including Na (alkali metal) with strong dipole character interposed between the organic EML 15 and the cathode 17.

Regarding claim 2 Hung discloses (claim 5) the interlayer is formed of sodium fluoride NaF.

Regarding claims 3 and 4 Hung discloses (column 3 lines 47-50) the thickness of the interlayer (non-conductive layer) is between 0.5 nm to 1.0 nm.

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Regarding claim 5 Hung discloses (column 3 lines 15-21) the organic light emitting material is formed of poly (paraphenylene vinylene ) PPV.

Claims 6-8 essentially recite the same limitation as of claim 5 and hence are rejected for the same reason.

Claims 1 -8 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,739,635 to Wakimoto.

Regarding claim 1 Wakimoto discloses (Fig. 4 column 2 lines 59-63, column 4 lines 1-6) an organic EL device comprising a cathode 1 and an anode 2, a hole transport layer (HTL) 4b interposed between the cathode and the anode, an organic emission material (EML) 3 interposed between the HTL and the cathode, an interlayer 6b formed of a halide series including sodium (sodium halide, claim3) interposed between the organic EML 3 and the cathode 1.

Regarding claim 2 Wakimoto discloses the interlayer formed of sodium halide. It is the position of the Examiner that halide includes fluoride and hence the limitation of NaF is anticipated by Wakimoto.

Regarding claims 3 and 4 Wakimoto discloses (claim 1) the thickness of the interlayer being 0.1 -10 nm (1-100 angstrom) which includes the values less than 2nm.

Regarding claim 5 Wakimoto discloses (Table 1) the organic light emitting material (EML) 3 formed of Alq<sub>3</sub>.

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Claims 6-8 essentially recite the same limitations as of claim 5 and hence are rejected for the same reason.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,121,727 to Kanai et al., U.S. Patent 7,026,757 to Kobayashi, U.S. Patent 7,012,364 to Mori et al. and U.S. Patent Application Publication 2005/0007011 to Cina disclose insulating layer of sodium fluoride between the organic light emitting layer and the cathode in an organic EL device.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Sikha Roy*

Sikha Roy  
Patent Examiner  
Art Unit 2879